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Docket No.: 1998P04724

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MAIL STOP: APPEAL BRIEF-PATENTS

Ву:_____

Date: November 19, 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Applic. No.

09/831,139

Confirmation No.: 9013

Inventor

Friedrich Müller

Filed

May 7, 2001

Title

Data Processing System or Communications Terminal with a

Device for Recognizing Speech and Method for Recognizing

Certain Acoustic Objects

TC/A.U.

2626.0

Examiner

Vincent Paul Harper

Customer No.

24131

Hon. Commissioner for Patents Alexandria, VA 22313-1450

BRIEF ON APPEAL

Sir:

This is an appeal from the final rejection in the Office action dated January 22, 2007, finally rejecting claims 11 - 14

Appellants submit this *Brief on Appeal* including payment in the amount of \$510.00 to cover the fee for filing the *Brief on Appeal*.

11/20/2007 PCHOMP

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Real Party in Interest:

This application is assigned to Siemens Aktiengesellschaft of München, Germany.

The assignment was recorded under Reel/Frame Nos. 011937/0543 on December 1, 2005.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 11 - 14 are rejected and are under appeal. Claims 1 - 10 were canceled in an amendment dated May 24, 2004.

Status of Amendments:

No claims were amended after the final Office action dated January 22, 2007.

Summary of the Claimed Subject Matter:

The subject matter of each independent claim is described in the specification of the instant application. Examples explaining the subject matter defined in each of the independent claims, referring to the specification by page and line numbers, and to the drawings, are given below. Citations referencing the originally filed specification ("Originally Filed Specification") and the Preliminary Amendment of July 12, 2001 ("Preliminary Amendment") are given below

Independent claim 11:

11. A data processing system (DPCD of Fig. 1) or communications terminal (DPCD of Fig. 1) for recognizing speech (see, for example, page 1 of the Originally Filed Specification, lines 34 - 36 and Insert A3 of the Preliminary Amendment), comprising:

a speech recognition device (SRU of Fig. 1) configured to recognize acoustic objects (AO of Fig. 1), where the acoustic objects comprise at least one of individual letters, combinations of letters or control commands (see, for example, page 3 of the Originally Filed Specification, lines 27 - 32 and Insert A5 of the Preliminary Amendment); and

an acoustic device (DU of Fig. 1) for acoustic output or optical display (DU of Fig. 1) of recognized acoustic objects (RAO of Fig. 1) (see, for example, page 4 of the Originally Filed Specification, lines 7 - 9 and Insert A7 of the Preliminary Amendment),

wherein

if an acoustic object (AO of Fig. 1) is incorrectly recognized (see, for 'example, page 4 of the Originally Filed Specification, lines 11 - 12), the speech recognition device (SRU of Fig. 1) subsequently recognizes

a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object (see, for example, page 4 of the Originally Filed Specification, lines 11 - 18 and Insert A7 of the Preliminary Amendment), and

a second control command causes the speech recognition algorithm to output at least one further acoustic object (see, for example, page 4 of the Originally

Filed Specification, lines 21 - 24 and Insert A8 of the Preliminary Amendment), wherein

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects. (see, for example, page 4 of the Originally Filed Specification, lines 21 - 28 and Insert A8 of the Preliminary Amendment),

Independent claim 13:

13. A method for recognizing acoustic objects (see, for example, page 2 of the Originally Filed Specification, lines 1 - 3), comprising:

providing a recognition algorithm (see, for example, page 2 of the Originally Filed Specification, lines 31 - 34) to recognize acoustic objects, where the acoustic objects comprise at least one of individual letters, combinations of letters or control commands (see, for example, page 3 of the Originally Filed Specification, lines 27 - 32 and Insert A5 of the Preliminary Amendment); and

acoustically outputting or displaying recognized acoustic objects (see, for example, page 4 of the Originally Filed Specification, lines 7 - 9 and Insert A7 of the Preliminary Amendment), wherein

if an acoustic object is incorrectly recognized (see, for example, page 4 of the Originally Filed Specification, lines 11 - 12), the recognition algorithm subsequently recognizes

a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object (see, for example, page 4 of

the Originally Filed Specification, lines 11 - 18 and Insert A7 of the Preliminary Amendment), and

a second control command causes the speech recognition algorithm to output at least one further acoustic object (see, for example, page 4 of the Originally Filed Specification, lines 21 - 24 and Insert A8 of the Preliminary Amendment), wherein

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects. (see, for example, page 4 of the Originally Filed Specification, lines 21 - 28 and Insert A8 of the Preliminary Amendment),

Grounds of Rejection to be Reviewed on Appeal

1. Whether or not claims 11 -14 are obvious over U. S. Patent No. 5,864,603 to Haavisto et al ("HAAVISTO") under 35 U.S.C. § 103.

Argument:

I. Whether or not claims 11 -14 are obvious over U. S. Patent No. 5,864,603 to Haavisto et al ("HAAVISTO") under 35 U.S.C. § 103.

On page 2 of the final Office Action dated January 22, 2007 (the "final Office Action"), Appellant's claims 11 - 14 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U. S. Patent No. 5,864,603 to Haavisto et al ("HAAVISTO").

Appellant respectfully traverses the above rejections.

A. HAAVISTO fails to teach or suggest, among other limitations of Appellant's claims, a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object, and a second control command causes the speech recognition algorithm to output at least one further acoustic object, as required by Appellant's independent claims 11 and 13.

More particularly, Appellant's independent claim 11 recites, among other limitations, a data processing system for recognizing speech that includes a speech recognition device configured to recognize acoustic objects. Appellant's claim 11 additionally requires, among other limitations, that the acoustic objects include at least one of individual letters, combinations of letters or control commands. Further, the invention of claim 11 additionally requires, among other limitations, an acoustic device for acoustic output or optical display of recognized acoustic objects. If an acoustic object is incorrectly recognized, the speech recognition device of Appellant's claim 11 subsequently recognizes a first control command that causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object and a second control command that causes the speech recognition algorithm to output at least one further acoustic object. A recognition probability of the at least one further acoustic object of claim 11 is less than the recognition probability of other acoustic objects.

Appellant's independent claim 13 recites a method analogous to the system of claim 11.

Appellant maintains that the combination of elements set forth in each of Appellant's independent claims, is neither disclosed nor suggested by Haavisto or any of the other references cited during prosecution of the present application. More particularly, Appellant's independent claims require, among other limitations:

a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object, and

a second control command <u>causes</u> the speech recognition algorithm <u>to</u> <u>output at least one further acoustic object</u>, wherein

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects. [emphasis added by Appellant]

More particularly, Appellant's claims require, among other things, that if a first control command to cause a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object and a second control command to cause the speech recognition algorithm to output at least one further acoustic object.

Appellant's claims additionally define, among other limitations, a recognition probability of the at least one further acoustic object as being less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects. More simply, Appellant's presently claimed second control command must cause the algorithm to output an acoustic object having a recognition probability that is less than the previously output acoustic object, but greater than other acoustic objects. This is supported by the specification of the instant application, for example, on page 4 of the Originally Filed Specification, lines 21 - 33. See also, for example, insert A8 of the Preliminary Amendment, which stated:

The input of another control command, for example the word "incorrect", could control the speech recognition algorithm in such a way that a further acoustic object is output. Preferably that object of which the probability or plausibility is admittedly lower than that of the object previously output, but greater than that of all the other objects coming into consideration. In this case, it would not be necessary for the user to say the object again. Instead further candidates would continue to be offered for the object to be recognized until the user no longer inputs the corresponding control command or possibly inputs an expressly confirmatory command, for example "correct". [emphasis added by Appellant]

As such, Appellant's specification supports that, in response to one control command, the algorithm expects the word to be repeated, but in response to a second control command (i.e., "incorrect", in the preferred embodiment), the algorithm offers another object to be recognized, withtout it being necessary for the user to say the object again. This is additionally supported by the language of claims 11 and 13, which state that a second control command causes the speech recognition algorithm to output at least one further acoustic object. As noted above, because the claimed "at least one further acoustic object" is ranked by probability (i.e., less than the previously offered object, but greater than other objects), the acoustic object that is output in direct response to (i.e., "causes") to the second control command, must be another attempted offering of the desired acoustic output, and not merely any phrase. Rather, random phrases would not be output by the algorithm based on probability, as required by Appellant's claimed "at least one further acoustic object".

In contrast to Appellant's claimed invention, pages 2 and 3 of the **final Office Action** analogize **the offering of the <u>same</u> output of HAAVISTO** to the results of <u>both</u> of Appellant's claimed first and second control commands. More particularly, pages 2 - 3 of the **final Office Action** point to the phone responding "number again please" in

col. 6 of **HAAVISTO**, lines 33 - 57, as disclosing the result of both of Appellant's first and second control commands. Appellant respectfully disagrees.

More particularly, col. 6 of HAAVISTO, lines 31-57, state:

Having listened to the phone's response the user may answer either "Yes" or "No". If the user answers "Yes", there follows a transition to state Dialling 9. Upon entering this state the phone responds "Dialling" and the call will be established. Again, the user may interrupt the action by saying "Cancel" before the called party picks up the receiver. If the user in state Verification 8 answers "No", the phone will go into state Voice control 2, wherefrom it will continue as described above.

If the recognition failed, the phone will go into state Digit dialling II 10.

Then the phone will respond "Number again, please". States Digit dialling II 10 and Digit dialling 4 are identical, except for the case of failed recognition. In the case of failed recognition, state Digit dialling II 10 is followed by state Digit dialling III 11. Upon entering state Digit dialling III 11 the phone responds "Number again, please". States Digit dialling III 11 and Digit dialling II 10 are identical except for the case of failed recognition. In the case of failed recognition, state Digit dialling III 11 is followed by state Digit error 12. Upon entering state Digit error 12 the phone responds "Unable to recognize number", followed by an Immediate transition to state Voice control 2. [emphasis added by Appellant]

The recitation of "Number again, please" cannot be the result outputted in response to Appellant's claimed "second control command". More particularly, in HAAVISTO, the phrase "Number again, please" does not have a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects, as required of the "at least one further acoustic object" of Appellant's claims 11 and 13. As such, the phrase "Number again, please output by the algorithm in HAAVISTO cannot be analogized to Appellant's claimed "at least a further acoustic object" that Appellant's claimed "second control command" causes to be outputted.

HAAVISTO reference.

Rather, **HAAVISTO** fails to teach or suggest, among other limitations of Appellant's claims:

a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object, <u>and</u>

a second control command <u>causes</u> the speech recognition algorithm <u>to</u> output at least one <u>further acoustic object</u>, wherein

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects.

Further, the disclosure of the prior art in col. 2 of HAAVISTO, lines 28 - 39 of HAAVISTO does not cure the above-discussed deficiency of the system of HAAVISTO. Rather, at best, arguendo, a person of ordinary skill in this art might be motivated by the disclosure of the prior art in HAAVISTO to substitute the command system of the prior art system in col. 2 of HAAVISTO, lines 27 - 39, for the system in col. 6 of HAAVISTO, lines 34 - 57. However, these disclosures in HAAVISTO would not motivate a person of ordinary skill in this art to add a system, such as the prior art system disclosed in the cited lines of col. 2 of HAAVISTO, to the system disclosed in the cited lines of col. 6 of HAAVISTO. Thus, HAAVISTO fails to teach or suggest Appellant's a system and method requiring both of a first control command that causes the algorithm to expected a repeated utterance and a second control command that causes the speech recognition algorithm to output Appellant's particularly claimed at least one further acoustic object, among other limitations of Appellant's claims 11 and 13.

As such, Appellant's claims 11 and 13 are believed to be patentable over the

B. HAAVISTO fails to teach or suggest, among other limitations of Appellant's claims, determining a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects, as required by Appellant's independent claims 11 and 13.

Further, as discussed above, Appellant's independent claims 11 and 13 recite, among other limitations:

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects. [emphasis added by Appellant]

The **final Office Action** acknowledged that **HAAVISTO** failed to specifically disclose, Appellant's particularly claimed "recognition probability". More particularly, page 3 of the **final Office Action** stated, in part:

Haavisto also describes the recognition of an acoustic object with multiple possible matches associated with probabilities (col. 4, lines 10 - 23, multiple phone numbers), but Haavisto does not specifically disclose (as part of a particular embodiment) "a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects." [emphasis added by Appellant]

Rather, pages 3 - 4 of the Office Action alleged that the missing element of **HAAVISTO** was "well known in the art as taught in the prior art section of Haavisto", stating, in part:

Haavisto in the prior art section describes prior teachings where during the recognition process several potential recognition objects are identified including a best result, a next best result, etc. where the candidates are arranged in order (col. 2, lines 28 - 39, "if the user gives a negative answer ..., the phone selects the result that is the second best match to the recognition" and "as a response to a voice command ... the telephone

indicates the next best candidate, when the candidates have been arranged in order"). [emphasis added by Appellant]

Previous Office Actions have relied on U.S. Patent No. 5,222,121 to Shimada ("SHIMADA"), in order to find the limitation of Appellant's independent claims that is missing from HAAVISTO. However, as it presently stands, the Examiner now contends that this feature is "well known in the art" and disclosed in col. 2 of HAAVISTO, lines 28-39, which ,Appellant notes, is merely a reference to the SHIMADA patent. Thus, the Examiner apparently withdrew the prior art rejection of record, which combined HAAVISTO with SHIMADA, in order to assert, solely, the HAAVISTO reference, while asserting the teachings of SHIMADA, as set forth in the background section of HAAVISTO. Appellant respectfully disagrees.

More particularly, one prior Office Action, dated July 25,2005, stated that "Shimada discloses a voice recognition dialing unit where if an utterance is misrecognized the user can call the next lower candidate [i.e., the next highest probability] by entering a voice command "NEXT ONE" (co1. 4, line 65 - col. 5, line 5)." Similarly, col. 2 of HAAVISTO, lines 27 - 39, cited in the final Office Action, state:

In addition, it is known from U.S. Pat. No. 5,222,121 an improvement to the method discussed in which the telephone selects in the recognition several recognition results and reproduces first the result that best matches the recognition. If the user gives a negative answer to this reproduction, the phone selects the result that is the second best match to the recognition. In the primary claim of U.S. Pat. No. 5,222,121 this function is generalized so that as a response to each repetition of a particular voice command the telephone indicates as voice reproduction and/or on the display the next best candidate, when the candidates have been arranged in order. [emphasis added by Appellant]

Appellant's claimed invention, in contrast to the teaching of SHIMADA, requires the situation where "a recognition probability of the at least one further acoustic

object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects."

This is neither taught, nor suggested, by either of the HAAVISTO or SHIMADA references. Rather, as pointed out above, SHIMADA simply discloses choosing the next candidate in a predetermined order of the candidates, whereas Appellant's claimed invention selects the next candidate on the basis of a determined probability.

More particularly, Appellant believes that the reference to SHIMADA in HAAVISTO refers to, for example, lower candidates, lower-place candidates - i.e., first, second and third place candidates - without clearly stating how these candidates are ranked to implement the invention. Specifically, SHIMADA, and more specifically, the reference to SHIMADA in HAAVISTO, fails to teach or suggest, among other things, how the order that apparently exists between the first, second and third place candidates is defined. That is, there is no disclosure in SHIMADA or HAAVISTO that teaches one having skill in the art how to determine the order of the candidates in the SHIMADA system.

Moreover, in the Advisory Action mailed December 28, 2005 in connection with the present application, the Examiner stated with regard to **SHIMADA**, in part:

As stated in the previous "response to arguments" (9/16/2005), Shimada teaches that during the recognition operation names are selected that resemble the characteristics of the entered name and that those selected are ordered where the ordering is necessarily with the most likely match first, the next most likely match next, etc. (col. 5, lines 1-7; col. 6, lines 15-25, i.e., the recognition operation assigns a likelihood and the options are presented as an ordered list). It is well known in the area of speech recognition that degrees of recognition are determined between an input utterance and potential matches (templates) (see any elementary speech recognition

discussion; e.g. Markowitz, "Using Speech Recognition" p. 35-38, previously submitted). [emphasis added by Appellant]

As such, the Examiner implies that **SHIMADA** implicitly discloses that it is well known in speech recognition that **degrees of recognition** are determined between an input utterance and potential matches, citing to the Markowitz text ("MARKOWITZ"), as proof. That Advisory Action, then goes on to state, in part, that:

Thus, as in Shimada, when multiple candidates result from a recognition operation, these candidates will have an <u>inherent</u> ordering based on <u>degree</u> <u>of match</u> where the candidates with the best match is considered the most likely match. And it follows that if the first best match is not the desired result, then the next match is now the most likely candidate." [emphasis added by Applicant

However, while it is indeed true that degrees of recognition may be determined between an input utterance and potential matches, as used in the conventional art, there is simply no disclosure in either SHIMADA or HAAVISTO as to how the candidates are ranked in order to determine the degree of recognition. Rather, as discussed above, SHIMADA simply states that a user can call up the next lower candidate by entering a voice command "NEXT ONE." That is, when the name of the first-place candidate recognized is different from the desired name, the user can call up a number associated with the name of the lower place candidate by entering a command. See, for example, col. 5 of SHIMADA, lines 15 - 20. Again, SHIMADA and HAAVISTO fail to provide any teaching, suggestion or motivation, or any discussion, at all, of ordering, degrees of recognition, probabilities or other similar features.

However, in the final Office Action, the Examiner implies that the mere fact a recognition occurs means that there is inherently some form of ordering or degree

of recognition. A review of the MARKOWITZ reference shows that there are different methods of voice recognition, for example, template matching, acoustic-phonetic and stochastic processing. While a degree of recognition and/or ordering may indeed occur, because of the methods applied, there is no disclosure of the recognition in MARKOWITZ, and MARKOWITZ also fails to teach or suggest, among other things, the particular ranking of probabilities required by Appellant's claimed invention. Among other things, HAAVISTO, SHIMADA and MARKOWITZ fail to teach, suggest, motivate, or provide any consideration of a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects, as required by Applicant's claims.

On the requirements for a *prima facie* case of obviousness, MPEP 2143.03 further explains, "All words in a claim must be considered in judging the patentability of that claim against the prior art." Since the **HAAVISTO** or **SHIMADA** references fail to teach or suggest, among other limitations of Appellant's claims, determining a recognition probability, where "a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects", Appellant's claims 11 - 14 are believed to be patentable over the art of record.

II. Conclusion.

For the foregoing reasons, among others, Appellant's claims 11 - 14 are believed to be patentable over the **HAAVISTO** reference.

The honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

If an extension of time is required for this submission, petition for extension is herewith made. Any fees due should be charged to Deposit Account No. 12-1099 of Lerner Greenberg Stemer LLP.

Respectfully submitted,

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Claims Appendix:

11. A data processing system or communications terminal for recognizing speech, comprising:

a speech recognition device configured to recognize acoustic objects, where the acoustic objects comprise at least one of individual letters, combinations of letters or control commands; and

an acoustic device for acoustic output or optical display of recognized acoustic objects,

wherein

if an acoustic object is incorrectly recognized, the speech recognition device subsequently recognizes

a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object, and

a second control command causes the speech recognition algorithm to output at least one further acoustic object, wherein

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects.

13. A method for recognizing acoustic objects, comprising:

providing a recognition algorithm to recognize acoustic objects, where the acoustic objects comprise at least one of individual letters, combinations of letters or control commands; and

acoustically outputting or displaying recognized acoustic objects, wherein

if an acoustic object is incorrectly recognized, the recognition algorithm subsequently recognizes

a first control command causes a speech recognition algorithm to expect repeated utterance of the incorrectly recognized object, and

a second control command causes the speech recognition algorithm to output at least one further acoustic object) wherein

a recognition probability of the at least one further acoustic object is less than the recognition probability of the previously output acoustic object, but greater than the recognition probability of other acoustic objects.

Evidence Appendix:

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or any other evidence has been entered by the Examiner and relied upon by appellant in the appeal.

Related Proceedings Appendix:

No prior or pending appeals, interferences or judicial proceedings are in existence which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. Accordingly, no copies of decisions rendered by a court or the Board are available.